

On behalf of the German Federal Ministry for the Environment,
Nature Conservation and Nuclear Safety

Analysis of Possible New Market Mechanisms Pilot Activities beyond the PMR

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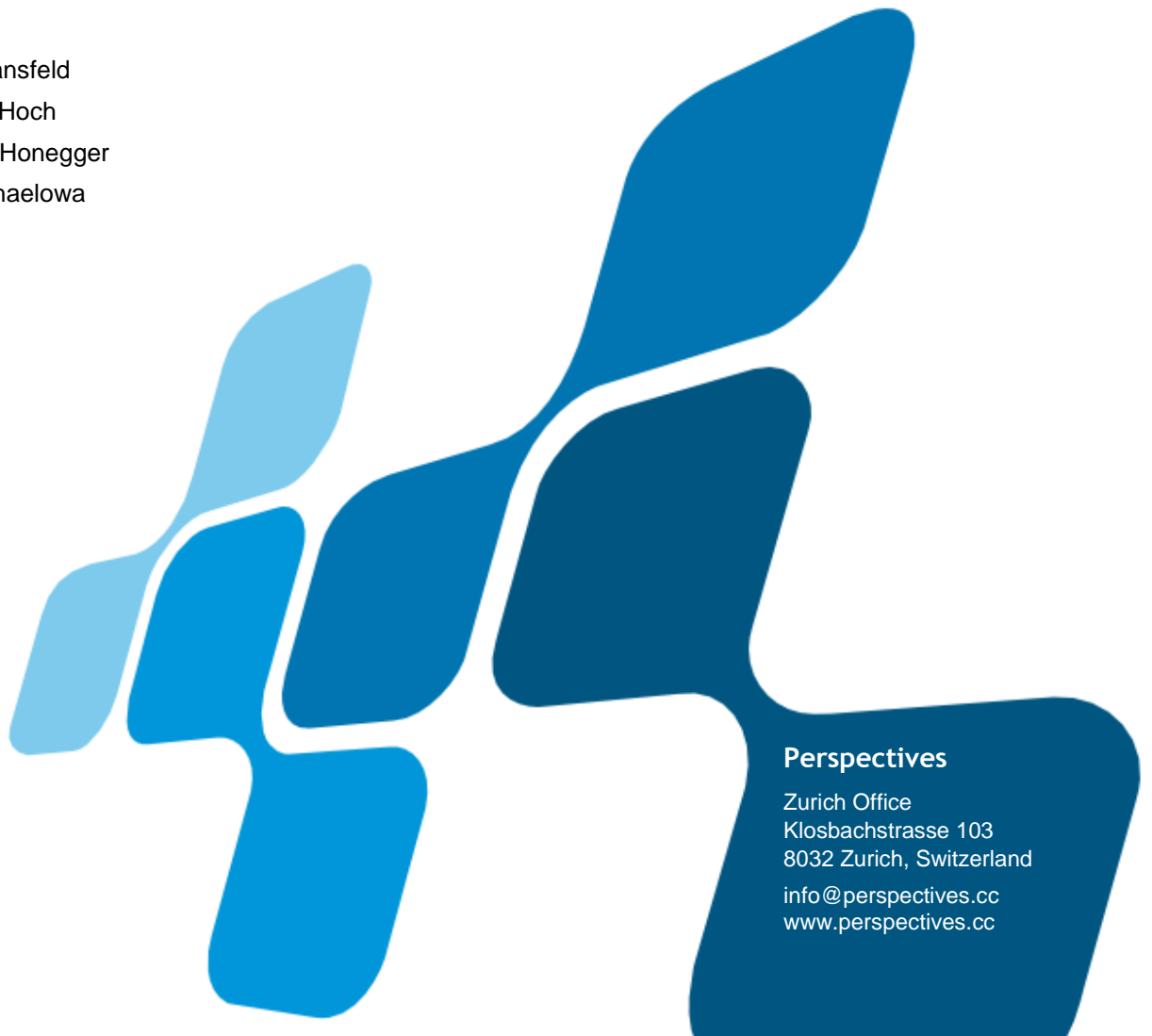
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Acronyms

ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action
AFOLU	Agriculture, forestry and other land use
ALBA	The Bolivarian Alliance for the Peoples of Our America (Spanish: Alianza Bolivariana para los Pueblos de Nuestra América)
A/R	Afforestation and Reforestation
BAU	Business as Usual
BMUB	German Environment Ministry
CAF	Development Bank of Latin America
CDM	Clean Development Mechanism
CDM+	Advanced Clean Development Mechanism (submission by Brazil)
(CDM) EB	Clean Development Mechanism Executive Board
CERs	Certified Emission Reductions
CH ₄	Methane
CIF	Climate Investment Funds
CME	Coordinating and Managing Entity
CO ₂	Carbon Dioxide
COP	Conference of the Parties
CoP	Coefficient of Performance
CPA	Component Project Activity
CRGE	Climate Resilient Green Economy Strategy
EE	Energy efficiency
EnDev	Energising Development Programme
ER	Emission reduction
EU	European Union
ETS	Emissions Trading System
FCPF	Forest Carbon Partnership Facility
FSF	Fast Start Finance
FVA	Framework for various approaches
GCF	Green Climate Fund
GEF	Global Environment Facility
GETFiT	Uganda's Feed In Tariff Program
GHG	Greenhouse Gas
GIZ	Gesellschaft für Technische Zusammenarbeit
IETA	International Emissions Trading Association
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
ISFL	Initiative for Sustainable Forest Landscapes

JCM	Joint Crediting Mechanism
KfW	Kreditanstalt für Wiederaufbau
LAIF	Latin American Investment Facility
LDCs	Least Developed Countries
MDB	Multilateral Development Banks
MRV	Measurement, Reporting and Verification
NAMA	Nationally Appropriate Mitigation Action
NMM	New Market Mechanism
PBC	Performance Based Climate Finance Facility
PoA	Programme of Activities
PMR	Partnership for Market Readiness
RAMA	Regionally Appropriate Mitigation Actions
RBF	Results-based Finance
RE	Renewable Energy
REDD	Reducing Emissions from Deforestation and Degradation
SBSTA	Subsidiary Body for Scientific and Technical Advice
SCF	Strategic Climate Fund
SCM	Sectoral crediting mechanism
SD	Sustainable Development
SREP	Scaling Up Renewable Energy Program
SRM	Sectoral reduction mechanism
STM	Sectoral Trading Mechanism
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VER	Verified Emission Reduction
WB	World Bank

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Executive Summary

Over the last years, the development of new market mechanisms (NMM) has stalled in the international climate negotiations, particularly due to developing countries lacking trust in the willingness of industrialized countries to generate demand for emission credits. Therefore, it is important to engage in pilot activities that can test the characteristics of new mechanisms. The only international initiative explicitly aiming at the testing of market mechanisms is the World Bank's Partnership for Market Readiness (PMR). In 17 countries, preparation of domestic market mechanisms and pricing instruments is supported; so far it has contributed to the introduction of emission trading in Chinese provinces and the concept of a carbon tax with offsetting in South Africa. However, the PMR does not include low-income countries.

We assess a number of initiatives that can provide lessons for the design of market mechanisms, ranging from the Japanese Joint Crediting Mechanism (JCM) to the Climate Investment Funds (CIF) of the World Bank. This assessment is done on the basis of a set of criteria covering mitigation contribution, MRVability and practicality.

We find that the JCM remains on a project-specific level and focuses on very small mitigation opportunities, while having doubtful outcomes with regards to environmental integrity and significant transaction costs. Clean Development Mechanism (CDM) PoAs would enable a rapid upscaling of mitigation, led by public institutions and could give rise to certified emission reduction (CER) cancellation certificates which could be used under an NMM. They also benefit from standardized baseline methodologies with a high level of credibility. Sectoral-scope renewable energy activities under the CIF so far have not led to the transfer of mitigation credits, while harnessing a high mitigation potential. It is surprising that these activities did not go for CDM registration, but this may be explained by the CER price crash that had started prior to implementation of large-scale CIF programmes. Environmental integrity of CIF so far was low given relatively simple, non-conservative methodological approaches. Carbon taxes can be combined with domestic offsetting schemes and could be financed directly through NMM revenues. The MRV of the emissions impact of the tax however is challenging, given that the monitoring of emissions on which the tax is levied. Depending on their design, Nationally Appropriate Mitigation Actions (NAMAs) can take the form of a NMM pilot, particularly in the case of small island states, provided the MRV is implemented in a robust manner. So, the NMM could serve as a "Gold Standard" for NAMAs. NAMAs are highly scalable and allow combination of policy instruments with specific mitigation technologies. Results-based finance (RBF) has spawned a highly interesting pilot activity in Latin America. This Performance Based Climate Finance spends € 8 million to acquire emissions units from project reducing methane emissions from waste. While this is a relatively small scale, the activities achieved under avoided deforestation (REDD+) show that reaching large scales is possible here as well.

Further examples that can provide lessons for NMM pilots are the GETFiT renewable energy reverse auctioning programme in Uganda, the CRGE approach in Ethiopia and dedicated credit programmes for industrial gas projects that have de facto been eliminated from the CDM. While the former is a "lighthouse" example of actual implementation, the latter two are concepts that still will have to materialize.

All these activities show that NMM pilot activities could take many sizes and shapes, and cover LDCs as well as large emerging economies. However it is clear that the majority of these initiatives did not envisage to generate credits, but aimed to provide credible proof of achieved greenhouse gas (GHG) reductions. Still, a number of such activities can provide valuable lessons for mechanisms that have the primary aim of credit generation. A key challenge will be to sustain environmental integrity through conservative and credible baseline and post-NMM emission level determination methodologies. This requires a robust MRV system. It also needs to be ensured that the incentives reach the entities that are actually able to reduce emissions.

Even if the Paris Agreement does not provide specific rules for new market mechanisms, it is certain that experiments on the design of such mechanisms will be undertaken, even if it is under the concept of "results-based financing". It can only be hoped that efficient approaches to greenhouse gas mitigation will thrive under the new climate policy regime emerging after Paris.

1. Introduction

1.1. Background

The role of market-based flexible mechanisms stands at a critical crossroads in international negotiations for a new global climate agreement. The Clean Development Mechanism (CDM) has evolved from a strictly project-based mechanism to being able to mobilize programmatic activities and adopts an increasingly sectoral orientation, e.g. through standardized baselines. These reforms have also improved access for previously under-represented countries and regions. In particular the latter aspect is critical for the legitimacy of multilateral policy instruments.

However, political reform demands by key parties on market mechanisms have also evolved. This focuses in particular on the need to achieve net mitigation contributions from market mechanism-related activities, as from 2020 onwards all countries are expected to contribute to global climate change mitigation. This has led to a debate on the need for further reforms of existing as well as the emergence of new market mechanisms. In addition, there is a growing focus on sectoral approaches for scaling up mitigation action. The role of the host countries is therefore becoming more important, both in the context of the New Market Mechanism (NMM) and possible future elements under the Framework for Various Approaches (FVA). The CDM has also already begun to mobilize net atmospheric benefits of mitigation activities in developing countries by enabling the cancellation of carbon credits rather using them as compliance offsets. Finally, market elements, including through the CDM, are being integrated into a fast-growing number of domestic emissions trading and carbon tax systems in non-Annex I countries.

Despite this general interest in market mechanisms, the political negotiations on market mechanisms under the UN Framework Convention on Climate Change (UNFCCC) are currently characterized by a high degree of uncertainty. Despite ongoing debates, no real regulatory progress has been achieved since COP18 in December 2012. Among the reasons for the slow pace of the negotiations on market mechanisms are the politicized nature of the changing roles of mitigation commitments and contributions by developing countries, the lack of demand for emission credits from industrialized countries, but also the lack of practical experience with new concepts, which undermines the willingness of states and regions to agree to commit to new mechanisms.

Practical experience from pilot activities therefore has a central role in improving the understanding of new market mechanisms in order to accelerate both the conceptual discussion and the UNFCCC negotiations through a 'learning by doing' approach. Progress in this area can so far be observed in particular in the context of the Partnership for Market Readiness (PMR) – so far the only forum in which specific pilot tests are planned at an advanced stage. However, the PMR is primarily focused

on emerging markets with more advanced economies.¹ Both NMM as well as FVA approaches must however cover also smaller and poorer countries if they want to become truly multilateral mechanisms and harness a significant share of the global emission reduction potential. The level of preparation and the respective potentials of new mechanism-related activities in countries outside of the PMR is however rather unclear, as these are scattered activities (e.g. the Japanese Joint Crediting Mechanism (JCM), or activities linked to the Climate Investment Funds (CIF) and CDM Programmes of Activities (PoA) can already be implemented by public actors). Thus, there is a need to gain an analytically informed overview whether such activities could serve as practical pilot activities for new multilateral market mechanisms.

1.2. Objectives

This report addresses the knowledge gaps described above by analysing activities developed outside of the Partnership for Market Readiness that could evolve to become possible NMM pilot activities. We discuss practical barriers and opportunities for NMM-related action in a broad geographical scope which also includes low-income countries. We hope that a better overview of activities on the ground could help to unlock the UNFCCC negotiations. Broadening the discussion to the circumstances of low-income countries could be a critical first step towards ensuring an inclusive design of the NMM.

1.3. Outline

Chapter 2 establishes the context for the analysis by providing an overview of the discussions and the current status of negotiations on the NMM and the FVA, as well as progress made under the PMR. Section 3 presents the analytical criteria used to assess possible pilot activities. Section 4 uses the analytical criteria introduced above to describe the key features of the identified pilot activities. Section 5 summarizes key issues in tabular format for a concise overview of the assessed activities, and offers brief evaluating comments. Finally, section 6 presents conclusions and options for how the further evolution of a multilateral NMM could build on the lessons from the pilots.

¹ Current Implementing Country Partners of the PMR include Brazil, Chile, China, Colombia, Costa Rica, India, Indonesia, Jordan, Mexico, Morocco, Peru, South Africa, Thailand, Tunisia, Turkey, Ukraine and Vietnam

2. The current state of the UNFCCC negotiations on NMM and FVA, and progress of the PMR

2.1. Status of UNFCCC negotiations on new market mechanisms

The New Market Mechanism

Following the mandate from the Bali COP in 2007, Parties proposed to establish a New Market Mechanism (NMM) during COP 17 in Durban 2011. The NMM would address both the need for scaling up mitigation action as well strengthening host country ownership and involvement to increase the level of mitigation ambition in a future climate agreement. The NMM is expected to be a centrally governed UNFCCC mechanism for which currently only a set of fundamental institutional design principles have been agreed. Among these is the objective to achieve net mitigation through project-based, programmatic and sectoral approaches. The NMM is expected to cover “broad segments of the economy”, though there is still no agreed definition what this exactly means. Little progress has been made in advancing the NMM due to a political blockade by some developing countries which argue that further elaboration of new market mechanisms would be contingent on raising Annex I ambition on mitigation and finance. This opposition was further fuelled by the collapse of the price on the CDM market, which led countries to call for a revival of demand for CDM credits before new mechanisms generating new supply would be set up. In 2012, COP 18 in Doha tasked the Subsidiary Body for Scientific and Technical Advice (SBSTA) with the design of modalities and procedures for a NMM. Proposed options for NMM design comprise variations of crediting and trading approaches. However, both COP 19 and 20 did not deliver a detailed set of modalities and procedures for the NMM. By mid-2015, the role for both existing and new market mechanisms in the new climate agreement had become a negotiation chip regarding the design of the Paris Agreement.

Despite the stalemate in the technical discussions on the NMM, the likelihood that markets will play an important role in the Paris Agreement is high, as the willingness to commit to deep mitigation cuts, in particular by industrialized countries, requires the flexibility in meeting commitments and contributions that market mechanisms can offer. This interpretation is supported by the frequent mentioning of both existing and new market mechanisms in the negotiation text (UNFCCC 2015). It is of critical importance that these elements refer both to existing as well as new mechanisms. This means that the likelihood has increased that a reformed CDM may be more relevant in the new agreement than some observers had expected only a few years ago. Areas of convergence as well as items for further discussion have been defined in a technical paper summarizing a workshop held in October 2013 by the UNFCCC Secretariat (UNFCCC 2013a). In a broad understanding, the NMM may comprise the following approaches:

- credited Nationally Appropriate Mitigation Actions (NAMAs)
- sectoral approaches
- policy-based approaches
- net avoidance approaches

- REDD+
- Project-based and programmatic approaches, including micro-scale activities

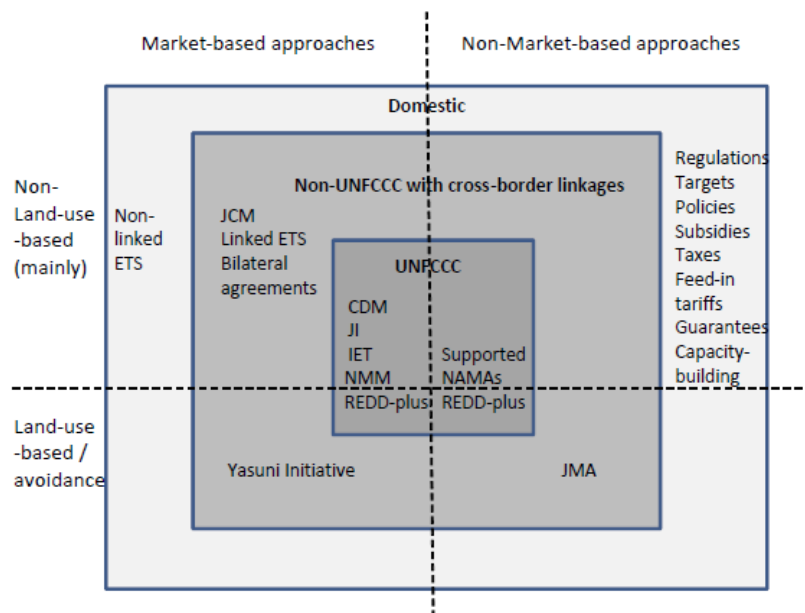
These mechanisms could either rely on crediting or trading within a centralized, decentralized or hybrid system. Submissions from Parties have built some mutual understanding on the future role of market mechanisms. Most Parties seem to agree on a NMM design that addresses mitigation activities beyond the project level, and strengthens the level of mitigation ambition. The European Union (EU) has been advocating for a sectoral crediting (SCM) and sectoral trading mechanism: A Sectoral Trading Mechanism (STM) implies that sanctions apply to a host country in case of non-compliance, allowances would be allocated ex-ante, responsibility to meet targets would be passed on to emitters via a domestic Emissions Trading System (ETS) or stringent mitigation policies, shortfalls could be filled by acquisition of allowances from abroad and a potential surplus could be sold. A sectoral crediting approach on the other hand implies a voluntary “no-lose” target without any sanctions in case of not meeting the target. Crediting would be done ex-post and only in case of over-achievement of the target.

Other parties have also put forward other concepts and approaches. Colombia proposed taking a discounting approach with a sectoral and sub-sectoral scope (UNFCCC 2011). While Brazil is suggesting a sectoral mechanism based on CER voluntary cancellation which represents a straightforward approach that could arguably be implemented without large transaction costs, Brazil’s proposal did not find approval at COP 19 (Brazil 2013). Still, Brazil argued for a role of an “enhanced Clean Development Mechanism (CDM+)” in a submission prior to COP 20 (Government of Brazil 2014), even though Brazil itself stated that this requires further elaboration. Ecuador has proposed a “Net Avoidance Emission Mechanism”, which would essentially allow claiming credits for not exploiting fossil fuel resources. The flagship initiative, the Yasuni National Park Initiative, however, was scrapped in late 2013 by presidential decree due to a lack of international financial support.

The Framework for Various Approaches

In addition to a top-down design for the NMM, COP 17 proposed the FVA as a bottom-up platform to recognize the various market-based mitigation mechanisms that numerous countries are envisaging to develop individually, partially outside of the UNFCCC architecture. These activities include various emissions trading schemes – supported in several emerging countries by the World Bank’s Partnership for Market Readiness (PMR) (section 2.3), bilateral offsetting schemes (Japan), domestic offsetting schemes (e.g. China, Australia, California, Canadian provinces) and potentially credited NAMAs. The FVA seeks to contain the accelerating fragmentation of mechanisms by establishing a minimum level of transparency, environmental integrity, and comparability of efforts. The scope of the FVA is even less concrete than NMM, however, there is consensus that it should stress environmental integrity, will not cover purely domestic measures, and as a minimum could serve as an information sharing platform between Parties. An illustrative overview of initiatives which may come under the umbrella of the FVA include (UNFCCC 2013b):

Figure 1 Possible scope of approaches under the FVA



Source: UNFCCC (2013b)

Looking ahead, despite the prolonged blockade to reach consensus on market mechanisms during negotiations in 2014 in Lima, Parties can still be expected to include market mechanisms as a tool for achieving their Intended Nationally Determined Contributions (INDC), which will form the backbone of the new climate agreement. If a sufficient number of INDCs from relevant parties foresee roles for market mechanisms, this may influence the decisions at COP 21 in Paris in December 2015. Actually, a number of industrialized and developing country INDCs published to date foresee the use of market mechanisms.

2.2. Progress of activities under the PMR

In the absence of progress in the negotiations, another approach to advance the reform of existing and the elaboration of new market mechanisms is through practical experience. The PMR is a World Bank initiative launched in 2010 with the goal of promoting market-based instruments in developing countries in order to scale up climate change efforts through a new generation of carbon market mechanisms. It seeks to build market-readiness capacity and pilot market instruments in key developing countries through financial and technical assistance, and also serves as a platform for knowledge sharing and technical discussion. The partnership is comprised of Contributing Participants – a coalition of developed countries that provide funding and know-how – and Implementing Country Participants. Currently, there are 17 Implementing Country Participants, all of which are middle or high-income economies according to the World Bank (WB) definition.

The PMR supports sectoral initiatives and country-led comprehensive proposals for the implementation of market tools to enhance greenhouse gas (GHG) mitigation efforts on a larger scale. Such proposals can range from complete pilots to building “market-readiness” components such as monitoring, reporting and verification (MRV) systems, setting baselines, improving data collection or establishing regulatory institutions. Main PMR activities include preparatory activities for:

- Domestic ETS;
- Sectoral crediting programs, including exploring credited NAMAs, with a focus on industrial, power, waste and transport sectors;
- Certification schemes;
- Carbon taxes with market elements such as allowing supplementary offsetting;

Until today, only few countries have reached the pilot or implementation phase, with notable exceptions being China’s provincial ETS, South Africa’s carbon tax proposal with offsetting elements and Mexico’s urban housing NAMA that is exploring crediting options. Still, some key lessons can be extracted:

- The preliminary step of building readiness is critical in order to enhance host-country ownership and to generate the necessary ambition — and thus demand — to sustain market-based mechanisms. However, this step has proven both complex and time consuming;
- The majority of submissions have prioritized implementing ETS or pursuing credited NAMAs, both of which require substantial readiness-building (e.g. baseline setting, MRV systems and GHG registries);
- Uncertainty regarding rules and definitions has slowed implementation;
- North-south and south-south dialogue is essential to achieve synergies and learn from practical experience. The WB has added roles for observers and a Roster of Experts to facilitate this knowledge sharing.

2.3. Initial observations

The discussion on new market mechanisms to a large extent takes place on a conceptual level, with the exception of the proposed pilot activities proposed under the PMR. In addition, what is largely absent from the discussion is a consideration of the particular circumstances of low-income countries in the design of new market mechanisms. A design of the NMM that would enable participation of such countries, however, is critical for the legitimacy of a new multilateral market mechanism, which needs to serve a large number of countries covering a broad range of levels of development. Political legitimacy, however, is critical for the success and effectiveness of market mechanisms, as the experience with the CDM ably demonstrates. Despite significant regulatory improvements, the CDM still suffers from reputational damage which was in part based on the *perception* that the mechanism would allow projects with doubtful sustainable development benefits to reap windfall profits, which mainly benefited a small number of countries. The key lesson is that a new market mechanism should carefully avoid this potential pitfall, and be equipped with an inclusive design that also

considers the circumstances of low-income countries, as a precondition for new market mechanisms can also support activities there.

Indeed, there are already many activities which could be seen as potential pilot activities for an NMM, including in low-income countries. Even though these activities may not be explicitly framed or understood as NMM pilots, many valuable lessons can be derived from an analysis that considers the requirements that NMM activities will need to meet. A more systematic analysis of such activities can contribute to closing some of these knowledge gaps and add substance to a largely conceptual debate, which may then contribute to making progress within the UNFCCC negotiations. Generating research findings that broaden the scope of what is commonly understood as NMM pilot activities, also contributes to shaping the debate on the NMM towards a more inclusive approach. Therefore, it is timely and useful to analyse innovative proposals that can inform the way forward for new market mechanisms including the NMM. As a first step, the next chapter will introduce some key analytical categories that can inform structured multi-criteria analysis.

3. Definition of criteria for analysis

This chapter defines criteria for evaluating pilot activities on the basis of a theoretical discussion of the different possible forms of NMM (various forms of 'crediting') in section 2.1. The definition of the criteria is based on the design principles of the NMM (UNFCCC 2013c) and recommendations expressed by the IPCC (2014). These criteria are used to identify and assess the most promising case studies within each of the NMM pilot categories. The criteria retained for the evaluation are:

- **Mitigation contribution**
 - **Emission reduction potential:** a NMM should scale up mitigation action and is expected to go beyond offsetting thus resulting in net mitigation; thus it should arguably have coverage beyond project-based activities;
 - **Transfer of mitigation outcomes:** Does the mitigation activity use crediting or allocating allowances to measure mitigation impacts, other approaches or none of the above?
 - **Environmental integrity:** Level of ambition of net mitigation contribution, as well as ability to track emissions reductions and avoid double-counting in the broader context of an international accounting system;
- **MRVability**
 - **Availability of MRV structures:** effort required to prove that activities deliver “real, permanent, additional and verified mitigation outcomes” (UNFCCC 2012);
 - **Data Availability:** accuracy and reliability of country-level data about sources and sinks of emissions covered;
- **Practicality**
 - **Feasibility:** activities should be administratively practical and, ideally, amendable to changes in information, technology or economics. This could include an evaluation of the extent to which NMM can build on existing structures from e.g. the CDM;
 - **Cost-effectiveness:** Emissions reductions should be achieved at the lowest economic and social cost, including considerations of transaction costs;
 - **Quality of the financing concept:** the extent to which the NMM leverages private sector participation, can deal with fluctuating demand for emissions reductions.
 - Degree of **host country support:** alignment of foreseen NMM activities with the goals and development strategy of the host country;
 - **Political feasibility** (stakeholder interests and social dimensions): distributional equity, or allocation of costs and benefits to different stakeholders, and the institutional capacity to overcome obstacles from opposing interest groups.

These criteria will be applied to selected activities that have the potential to either evolve into NMM pilots or provide important lessons for the further design of the NMM.

4. Identification of possible NMM pilot activities

This chapter identifies seven categories of NMM pilot activities outside the PMR and provides specific case studies for each. These case studies comprise activities in high-income, middle income and low-income countries, as the latter category is not represented in the PMR and lessons on design of market mechanisms appropriate to its circumstances are very important to unlock the negotiations. Still, shedding light on additional cases from more advanced developing countries also continues to be relevant given the sometimes large reduction potentials from emissions-intensive sectors.

4.1. Japanese Joint Crediting Mechanism

Introduction

Under the JCM, Japan supports clean technology projects in developing countries² that apply Japanese technology. Bilateral agreements between the host country and Japan define a procedure³ that emulates the CDM project cycle, which involves the Japanese government, the host country government, the Japanese technology provider and the project participant in the host country (JCM 2014b). A part of the resulting credits accrues to the Japanese government in return for financial support and is at least initially not tradable. The JCM is in its early stages and thus no transparent market price for JCM credits has evolved so far.

Importantly, the JCM seems to have been created out of a lack of satisfaction with the CDM, which has been reinforced by Japan's withdrawal from the Kyoto Protocol in its second commitment period. The bilateral agreements state that the "JCM covers the period until a possible coming into effect of a new international framework under the UNFCCC. Both sides consider the possible extension of the JCM [...], taking into account, inter alia, the progress made in the United Nations negotiations on climate change" (JCM 2014a). Yet, there is no multilateral oversight; instead, bilateral committees supervise the project cycle and issue credits. Validation can be conducted simultaneously with verification, and also by the same auditor (JCM 2014b). The CDM demands separate independent auditors, and separate audits. While the aim of this JCM rule is evidently to lower transaction costs, it needs to be ensured that environmental integrity does not suffer, in particular as the majority of auditors seem to come from Japan, which could be perceived as a possible source of bias.

This governance arrangement could be interpreted as an insufficient level of checks and balances that may open the door to conflicts of interest that may undermine the environmental integrity of activities. It is thus of critical importance to assess individual methodologies, possibly by comparing them to relevant CDM methodologies, if they cover the same technologies and sectors.

² JCM partner countries currently include Bangladesh, Cambodia, Chile, Costa Rica, Ethiopia, Indonesia, Kenya, Laos, Maldives, Mexico, Mongolia, Palau, Saudi Arabia and Vietnam.

³ http://www.mmechanisms.org/document/20140509_JCM_goi.pdf

Activities

By July 2015, only five JCM projects had been registered (2 projects each in Indonesia and Mongolia, one in Palau).

The first registered JCM project is implemented by the Japanese manufacturers Nippon Koei Co. Ltd. and Ebara Refrigeration Equipment & Systems Co. Ltd. supply an Indonesian textile factory with a high-efficiency centrifugal chiller.⁴ As the existing chillers make up the majority of the factory's energy needs, this measure leads to energy savings from air-conditioning and process cooling.⁵ The project started in March 2014 and has a lifetime of 7 years, which is identical to CDM crediting periods. Over this period the activity is expected to reduce 799 tCO₂e only. This is far below even the micro-scale category in the CDM.

Project participants are the textile factory as well as the two Japanese technology providers; the project is audited by the third party Lloyd's Register Quality Assurance Limited. It applies the JCM methodology AM002 Ver1.0 "Energy Saving by Introduction of High Efficiency Centrifugal Chiller"⁶ that was developed for this project by Nippon Koei. According to the methodology the calculation of baseline emissions applies GHG emissions from reference chillers and calculates with power consumption of project chiller, ratio of CoPs (Coefficient of Performance) of reference/project chillers and grid emission factor. Project emissions are GHG emissions from using project chiller, calculated with power consumption of project chiller and grid emission factor. The monitoring plan covers the power consumption of the project chillers.

Although there are close to 400 unpublished feasibility studies for possible JCM activities, there are still only two further projects seeking registration. In addition, there are 15 approved methodologies, and 20 additional ones seeking approval. All methodologies seem to be country-specific with no clear trajectory for applicability in other countries, which raises questions about potentially high transaction costs. Textbox 1 below compares a Mongolian JCM methodology with the respective CDM methodology.

Textbox 1: Comparison of JCM methodology "Installation of energy-saving transmission lines in the Mongolian Grid" with CDM methodology AM 0097 "Installation of high voltage direct current power transmission line"

The first methodology submitted for public comments under the JCM covers a project type that also has a dedicated CDM methodology. It is therefore possible to compare the environmental integrity as well as the complexity of the methodologies.

⁴ Find the PDD at: https://www.jcm.go.jp/projects/1/pdd_file

⁵ The cooling requirements of the project are 1.75 MW (500 US refrigeration ton, USRt). Before the project, two existing chillers whose plate capacity is 0.8 MW (230 USRt) (centrifugal chiller) and 1.4 MW (400 USRt) (absorption chiller using steam from fossil fuels) are operated with the actual capacity of 0.7 MW (200 USRt) and 0.87 MW (250 USRt) respectively in the factory. These chillers were replaced with one high-efficiency centrifugal chiller of 1.75 MW (500 USRt) by the project.

⁶ <https://www.jcm.go.jp/id-jp/methodologies/7>

The JCM methodology is much simpler than the CDM methodology, requiring less than ¼ of the text pages of the latter. The approach of the JCM methodology to determine the baseline losses relies on default factors for the electrical resistance of the line derived from the Mongolian standard for electric transmission lines, while the CDM methodology requires simulation of baseline line losses with software that respects international standards (German or International Electrotechnical Commission). The default electrical resistance factors used by the JCM methodology are not conservative because they are defined at an ambient temperature of 20°C while mean annual air temperature in Mongolia is 0°C. However, project emissions are also measured at an ambient temperature of 20°C. As resistance rises linearly with temperature, the difference between the (non-conservative) baseline and (conservative) project emissions remains equal to that between a conservative baseline and realistic project emissions.

The JCM methodology is not clear about the grid emission factor used; it seems to be the grid average, whereas the CDM methodology requires calculation of the combined build and operating margin to derive the grid emission factor. Generally, the latter approach gives a lower value in countries dominated by fossil fuel power plants such as Mongolia.

Overall, the JCM methodology is much simpler than the CDM methodology but has a lower degree of environmental integrity.

Table 1 Summary analysis of pilot activities under the JCM

Item	Evaluation
Emission reduction potential	<ul style="list-style-type: none"> JCM remains on project level rather than covering sectors For the first registered project JCM very low, but proposed methodologies also include industry (cement) with higher ER potential
Transfer of mitigation outcomes	<ul style="list-style-type: none"> Baseline and credit mechanism that generates offset certificates, building on adjusted CDM methodologies and procedures Net mitigation impacts are achieved by defining a BAU baseline as well as a more ambitious crediting threshold Part of the credits are to be transferred to Japan
Environmental integrity (including net mitigation contribution)	<ul style="list-style-type: none"> Net emission reductions are only achieved if the difference between BAU and the crediting threshold is credibly calculated Risks to environmental integrity include that additionality is defined through positive lists and third-party auditors are accredited by the joint committees rather than a neutral body without direct interests
Availability of MRV structures	<ul style="list-style-type: none"> The JCM has established an MRV regime including third party auditing; MRV hinges on the Joint Committee that comprises members from Japan and the host country, but no international and independent actors
Data Availability	<ul style="list-style-type: none"> Depending on host country, project and project type; as individual activities are involved one can assume better data availability as on aggregated level
Technical feasibility	<ul style="list-style-type: none"> JCM is so far restricted to very few projects, but it is expected that activity types will focus on Japanese technology exports

Item	Evaluation
Cost	<ul style="list-style-type: none"> Feasibility studies, methodology development and establishing project cycles and procedures; Transaction costs per project are so far borne by the Japanese Government
Quality of the financing concept	<ul style="list-style-type: none"> Project finance so far originates from the Japanese Government – it is unclear whether this will change after the pilot phase; A transparent market price for emission reductions would be important for investment decisions
Level of support by host country	<ul style="list-style-type: none"> Host countries form bilateral joint committees with Japan, which are regulating the JCM project cycle, including the direct issuance of credits
Political feasibility (stakeholder interests and social dimensions)	<ul style="list-style-type: none"> Direct government interest support for projects through bilateral committees is a key factor in overcoming regulatory investment barriers

Summary

It is the explicit intention of the JCM to act as a bridge from the CDM to FVA. While some elements such as net mitigation could potentially be addressed provided the environmental integrity of JCM methodologies is sound, the JCM clearly remains on a project-level for the time being. In addition, the lack of independent oversight raises questions about the environmental integrity and efficiency of the activities. Therefore, it seems unlikely that the JCM would become integrated into the NMM; more likely would be the JCM's consideration in the FVA. This would likely require Japan to open the JCM to international accounting standards (which need to be defined by the international community), and to allow for other technology than of Japanese origin. For the particular pilot case of the Indonesian textile factory the very low amount of certifiable emission reductions seems not to be in balance with the transaction costs of the JCM.

4.2. CDM PoA based activities with potential for NMM

Introduction

Programmatic approaches in the CDM have been very successful in mobilizing small and micro-scale technologies even at household levels. This has led to a stronger representation of both previously underrepresented host countries, and also technologies with higher costs but high sustainable development impacts. In addition, the PoA design which aggregates numerous individual mitigation activities and is open to including further activities post-registration allows reaching sectoral scale, possible even in multiple countries under the same PoA. However, due to the collapse of CDM credit prices, the activities that could previously benefit from credit (CER) revenues are now lacking incentives. There is thus growing attention to the idea of building credited NAMAs on programmatic CDM activities or PoAs. While the transformation of PoAs to credited NAMAs could theoretically take numerous forms, the concept is still under development and open questions e.g. the legal structure of such a NAMA/PoA instrument, and the demarcation between the different types of mitigation outcomes (credited and non-credited) is yet to be clarified.

4.2.1. Public-private partnership PoA-NAMA

One example of a public-private collaboration seeking to develop such a PoA-based NAMA is the “DelAgua Health and Development PoA” which seeks complementary support by the “Rwanda Health NAMA”. Both activities seek to disseminate improved cook stoves and water filters in Rwanda, and are implemented by the Rwandan Ministry of Health and the health equipment supplier DelAgua. The PoA is registered and operational, and is to be funded both by limited revenue from CER sales as well as donor funding in support of the vast health benefits this project offers. So far, 250'000 households in the two poorest segments of the population have received cook stove and water filter devices through the programme, and upon reaching 600'000 individuals, annual emissions reductions of around 1 million tons of CO₂ could be achieved (Ngabo et al. 2013). One particular aspect about transferring CDM PoA activities into a NMM context is the possibility of regional initiatives, which do not stop at country borders – as is the case in the context of NAMAs (e.g. through credited regionally appropriate mitigation actions or RAMAs). Open challenges however, include both financing and technical issues. There is huge lack of NAMA finance that would allow to pilot such innovative approaches. In addition, there is a lack of clarity and technical guidance on how to demarcate the mitigation impacts of the NAMA as well as the PoA component. While CER cancellation is one straightforward approach, the requirements and preferences of NAMA funds may not allow for such an approach, which is still seen as controversial. More positively, the MRV structures of the CDM are fully operational and allow for sectoral upscaling. The new market mechanism element could be introduced by combining different financial instruments. If a sufficient amount of ex-ante grant finance could be mobilized, (a portion) of the generated CERs may merely be used as receipts for achieved mitigation impacts rather than offsets, which would achieve a net mitigation impact.

4.2.2. Public sector operated CDM Programme of Activities

There are currently also several PoAs operating under the ownership of public agencies rather than private project developers. 13 PoAs with public sector Coordinating and Managing Entities (CMEs) already comprise at least 3 CPAs, which means they are implementing their programmes. These include for instance the following PoAs, which have been chosen to illustrate a representative sample of regions and technologies supported by the PoA approach (shown in Table 2 below).

The scalability of PoAs enables harnessing of a large mitigation potential (>4 Mt CO₂ in 2020 in case of a Bangladeshi solar home systems installation programme with 13 CPAs), in a diverse range of sectors and circumstances. Large publicly operated PoAs are arguably an ideal starting point for elements of a NMM. Given that this type of initiative is successfully implemented in several countries, and is based on approved and tested CDM methodologies, it scores also high in terms of MRV and data availability, feasibility and cost. The financing concept however is vulnerable to volatile and depressed CER prices, even though new sources of demand such as bilateral procurement programmes for initiatives with high sustainable development benefits may be available.

Table 2 Selected CDM PoAs with public sector CME and more than 3 CPAs

PoA ID	Country	Name	PP	Technology	Number of CPAs	2020 kCERs
PoA0001	Bangladesh	Installation of Solar Home Systems in Bangladesh	Infrastructure Development Company Limited	Solar PV	14	1243,48
PoA0031	Uganda	Uganda Municipal Waste Compost Programme	National Environmental Management Authority (NEMA)	Landfill composting	8	837,010
PoA0008	Tunisia	Solar Water Heater Programme in Tunisia	Agence Nationale pour la Maîtrise de l'Energie (ANME)	Solar water heating	8	417,630
PoA0035	Vietnam	Vietnam Renewable Energy Development Program (REDP)	Vietnams Ministry of Industry and Trade	Hybrid renewables	4	557,201
PoA0016	Egypt	Egypt Vehicle Scrapping and Recycling Program	Ministry of Finance	Transport (scrapping old vehicles)	3	212,460

Source: Data from UNEP DTU (2015a)

4.2.3. Voluntary cancellation under the CDM

Brazil is suggesting the NMM should make use of the existing infrastructure of the CDM, and could be based on voluntary cancellations of CERs. Given that the CDM Executive Board (EB) has been accepting voluntary CER cancellations by credit owners since 2012, cancellation certificates can be transferred to third parties. These could include Parties, non-state actors, companies or even individuals. Sectors such as air transport or maritime transport could benefit from using cancellation certificates in order to reduce carbon footprints without creating new mechanisms. Such cancellations would provide a lifeline for the CDM over the next years, could positively impact the carbon price, and would even allow for the creation of new market mechanisms.

A clearer focus on cancellations – an option for action based on the CDM that is readily available for everyone – would allow existing projects to move forward and capitalize on the fact that the CDM is still generating a lot of credits. In Brazil this mechanism has already been put to use in making the Rio 20+ conference carbon neutral. Also, the GHG emissions of the World Cup in 2014 were offset through CER cancellations, which are also planned for the Olympic Games in 2016. However, Brazil's proposal did not find approval at COP 19⁷.

⁷ See http://unfccc.int/files/documentation/submissions_from_parties/adp/application/pdf/adp_brazil_workstream_2_cdm_voluntary_cancellation_20130918.pdf and most recently http://www4.unfccc.int/submissions/Lists/OSPSubmissionUpload/73_99_130602104651393682-BRAZIL%20ADP%20Elements.pdf

Table 3 Evaluation of pilot activities under the PoAs with potential for NMM

Item	Evaluation
Emission reduction potential	<ul style="list-style-type: none"> Potentially very high give the possibilities for scaling up PoAs
Environmental integrity (including net mitigation contribution)	<ul style="list-style-type: none"> CER cancellation offers a simple approach to achieve and measure net mitigation and avoidance of double counting is achieved Net mitigation could also be achieved through conservative default values or discounting Provisions for avoiding double-counting need to be observed to prevent attributing emissions reductions to both CER buyers and national mitigation contributions
Transfer of mitigation outcomes	<ul style="list-style-type: none"> Based on CERs, which could be either traded or also cancelled to achieve net mitigation impact
Availability of MRV structures	<ul style="list-style-type: none"> Good, MRV systems can build on existing CDM methodologies
Data Availability	<ul style="list-style-type: none"> High, PoAs already required monitoring plans
Technical feasibility	<ul style="list-style-type: none"> High, concept would build on existing infrastructures or already operational projects; cancellation is already being applied Building a NMM on existing CDM methodologies may run the risk of following the project-driven nature of the CDM, thus failing to unlock the potential to achieve longer-term sectoral transformations of economies (e.g. through policies)
Cost	<ul style="list-style-type: none"> Additional to traditional PoA development costs will be transaction costs associated
Quality of the financing concept	<ul style="list-style-type: none"> Private sector investment dependent on market prices Public or other climate finance may be able to mitigate market risks
Level of support by host country	<ul style="list-style-type: none"> High, due to Sustainable Development (SD) co-benefits Public sector can be implementing project participant case of public sector PoAs or NAMAs
Political feasibility (stakeholder interests and social dimensions)	<ul style="list-style-type: none"> Letter of Approval needed for any CDM activity Direct public involvement in some PoAs or NAMAs Expectation of net mitigation rather than offsetting without adequate financial compensation could undermine incentives for private sector involvement or create conflicts over ownership of CERs

Summary

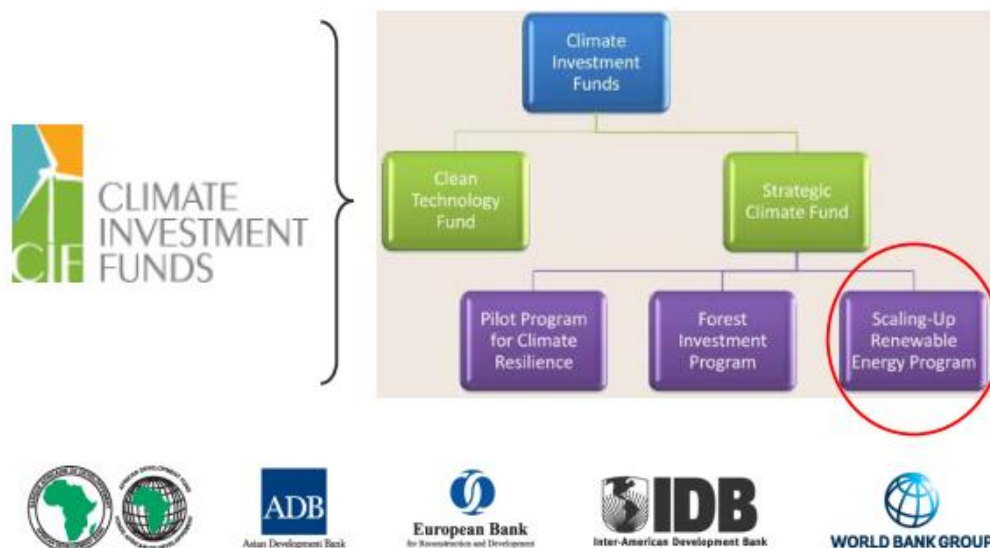
The voluntary cancellation of CERs from domestic sources is – to some extent – a results-based finance approach. Under the NMM a host country government could cancel CERs from a broader range of activities (up scaling mitigation and deriving net mitigation effects), while compensating the owners of the CERs. Any revenue streams from the NMM could then ex-post go into the public budget and re-compensate for the government efforts of cancelling the CERs. The example of public sector-driven PoAs with several existing CPAs shows that the CDM already approaches elements of the envisioned design of new market mechanisms with potential for further upscaling. These activities take place with technologies with high sustainable development impacts, and have also been taken up by in low-income countries.

4.3. Climate Investment Funds

Introduction

The Climate Investment Funds (CIF) includes the Clean Technology Fund and the Strategic Climate Fund. The two funds include a number of funding windows and programmes, which are administrated jointly by the World Bank and the relevant regional multilateral development bank, e.g. the African Development Bank in Africa. Figure 2 illustrates the configuration of the related funds and programmatic windows.

Figure 2 Structure of the Climate Investment Funds



Source: CIF (2014)

The Strategic Climate Fund (SCF) finances pilot activities that induce transformational change, focusing particularly on supporting sectoral approaches with large potential for scaling up climate action. The Pilot Program for Climate Resilience focuses on adaptation activities, the forest investment program on forestry activities, which strong focus on building REDD+ readiness. The remaining programs, including the Program for Scaling-Up Renewable Energy in Low Income Countries (SREP) and the Clean Technology Fund, primarily finance a range of renewable energy activities. The CIFs have been the key channels for Fast Start Finance (FSF) as agreed at COP 15 in 2009, and have sunset clause that makes them test balloons for approaches that may be relevant for the Green Climate Fund (GCF).

Activities

Supported activities range from large-scale technologies such as wind, geothermal, but also concentrated solar power to rural energy access activities through mini-grids, offgrid-lighting or solar-water heaters in Ethiopia, Kenya or Mali. All of these activities occur in typical CDM sectors, with approved CDM methodologies, and sometimes high mitigation potential. As per CDM regulation, these activities would be eligible to participate in the CDM, even though it seems to have been a political decision not to add a “CDM layer”. The funding is restricted to individual activities which have been selected with the goal to achieve a transformative effect on the sector, e.g. by supporting the first wind farm in a country, which then creates a demonstration effect. Yet, it is unclear how the remaining potential activities in the respective sector could be funded. As public climate finance, which has fed the CIFs is limited, an NMM based on CIF-supported pilot activities and CDM methodologies may be able to support a broader transition by incentivizing further public and private investment. Options to achieve net mitigation while including a carbon market layer include credit cancellation or crediting only below ambitious thresholds, even though full mitigation impacts should be made transparent.

Table 4 Evaluation of CIF pilot activities

Item	Evaluation
Emission reduction potential	<ul style="list-style-type: none"> Very high, both regarding emission intensive economies and helping low-income countries embark on low-carbon development pathways before building up carbon-intensive infrastructure
Transfer of mitigation outcomes	<ul style="list-style-type: none"> Not applicable in current CIF design CDM methodologies exist for many CIF-supported activities so that crediting could be added easily from a technical perspective
Environmental integrity (including net mitigation contribution)	<ul style="list-style-type: none"> Currently, activities do not generate carbon credits, thus full net mitigation contribution If activities would generate credits, the calculation of mitigation benefits would not be of a quality comparable with the CDM
Availability of MRV structures	<ul style="list-style-type: none"> Uses its own programme-specific M&E framework Although emission reductions are a performance indicator, there are no published and validated methodologies, and some examples (SREP Ethiopia) indicate a lenient approach that results in very high assumed mitigation impacts
Data Availability	<ul style="list-style-type: none"> Good, due to thorough activity appraisal according to MDB standards
Technical feasibility	<ul style="list-style-type: none"> Good, due to thorough activity appraisal according to MDB standards, and selection of most advanced proposals from national portfolio
Cost	<ul style="list-style-type: none"> Large-scale financing available, including leveraged finance from MDBs
Quality of the financing concept	<ul style="list-style-type: none"> Supported activities are subject to MDB appraisal, based on their international standards
Level of support by host country	<ul style="list-style-type: none"> Very high, due to government involvement in the planning process in all countries, in some countries even for implementation
Political feasibility (stakeholder interests and social dimensions)	<ul style="list-style-type: none"> High due to mandatory government involvement from the outset, and intense consultations on investment plans and funding decisions

Summary

The Climate Investment Funds are currently exclusively a climate finance instrument that does not rely on market incentives but on classic Multilateral Development Banks (MDB) financing approaches, even though the involvement of the host country government and the assessment of climate benefits may be more thorough. Importantly, although the activities aim to be transformative for the respective sectors, there are no clear funding prospects for activities beyond the initial pilots. An advantage of market-based approaches is that, provided incentives i.e. ER certificate prices are attractive enough, they can unlock investments in further activities, including from the private sector. Given the technologies and activities that are supported through the CIFs, it is surprising that they do not go for CDM registration, either as a full-fledged market mechanism or at least some of its elements e.g. to develop strong MRV tools. Although there is no hard evidence available without further research, this situation can most likely be explained with the timing of the elaboration of CIF country investment plans, when CER prices had already begun to slide towards the current depressed levels, and uncertainty on the CDM's future had been high. Still, at least for activities for which workable CDM methodologies exist, the potential to accelerate implementation of further activities based on CIF pilots through market mechanisms should be assessed in more detail, possibly in the context of a reformed CDM or NMM.

4.4. Carbon Taxation

Carbon taxes have been adopted by an increasing number of developing countries in recent years. The cases of South Africa, Mexico and Chile provide insights on potential pathways for inclusion in NMM pilot activities. One option is a transformation along similar lines as the initial Australian approach to transition from a carbon tax to an ETS, before a change in government abolished this approach. A variety of this approach could be to rely on sectoral trading schemes that are eventually combined to reach national targets.

South Africa had announced a carbon tax in 2010 but postponed the introduction until 2016.⁸ After long political quarrelling a compromise was reached by applying a fuel input tax as a proxy for a direct tax on emissions.⁹ CO₂e emissions will be calculated based on carbon content of fuels. According to the National Treasury (2010) the tax rate will start from 120 Rand (8.6 €) per ton, and increase annually by 10% until 2019. The carbon tax shall also allow compliance companies to offset their tax liabilities through various offset standards¹⁰, with an expected demand of 20 to 25 million credits per year (IETA 2014a).

⁸ <http://www.bloomberg.com/news/2014-02-26/south-africa-delays-carbon-tax-plans-levies-on-acid-mine-water.html>

⁹ The carbon tax will cover only emissions that result directly from fuel combustion and gasification, and from non-energy industrial processes.

¹⁰ So far it is unclear which international standards such as CDM, VCS or Gold Standard would apply, and when the South African Government introduces its own standard.

Mexico has imposed a domestic carbon tax in early 2014. The revenues from this tax of USD 3.5/t CO₂ levied on all fossil fuels except natural gas flow directly into the general budget. CERs can be used by entities at their market value to pay carbon tax liabilities, but not offset them directly. A voluntary carbon exchange¹¹ offers to trade credits for compliance under the carbon tax (IETA 2014b).

In May 2014 **Chile** initiated a tax reform that includes environmental taxes such as an annual tax on GHG emissions from thermal power plants (> 50 MW installed capacity). The carbon tax rate is USD 5/t CO₂e emitted and it shall enter into force in 2017 (Borregaard, 2014).

Table 5 Assessment of pilot carbon taxes with market elements

Item	Evaluation
Emission reduction potential	<ul style="list-style-type: none"> High, as most emissions-intensive sectors and fuels are covered
Transfer of mitigation outcomes	<ul style="list-style-type: none"> Domestic transfer of mitigation outcomes outside of the carbon tax Relying on existing market mechanisms, primarily CDM
Environmental integrity (including net mitigation contribution)	<ul style="list-style-type: none"> Mitigation effect is reached through pricing of GHG emissions. Offsetting is supplementary and could include a discount factor on each certificate, so that net mitigation would be reached
Availability of MRV structures	<ul style="list-style-type: none"> Mitigation impact of tax needs a good methodological calculation of baseline emissions levels as well as post-tax levels for the scope of emissions covered by the tax
Data Availability	<ul style="list-style-type: none"> Depends on sectoral scope – if it is consistent with inventory delineation, data should be readily available. Otherwise, dedicated data collection is required
Technical feasibility	<ul style="list-style-type: none"> Depends on emissions scope. Easy if fuel taxes already exist
Cost	<ul style="list-style-type: none"> Planning and Implementation of domestic tax will be financed from domestic budget, and transaction costs will probably be priced into the tax rate
Quality of the financing concept	<ul style="list-style-type: none"> Project finance for offsetting activities Tax revenues could be used to incentivize further mitigation activities not covered by tax
Level of support by host country	<ul style="list-style-type: none"> Requires very strong government support / initiative to introduce carbon tax
Political feasibility (stakeholder interests and social dimensions)	<ul style="list-style-type: none"> Challenging due to possible resistance against introduction of new taxes Prospect of transition to market mechanisms may be very attractive to key industries due to possibilities to lower costs of implementation

¹¹ www.mexico2.com.mx

Summary

Carbon taxation – in particular in combination with domestic offsets – can become an attractive domestic mitigation instrument. Under the NMM, host country governments could use carbon taxation as a domestic mitigation instrument and feed potential NMM revenues into the taxation scheme (e.g. for decreasing tax rates). Due to the complexity of the approach this may be more interesting for countries with strong capacities and institutions, which are typically found in emerging economies. Independently of whether an NMM layer will be added to these approaches, the increasing use of the CDM for domestic purposes in developing countries demonstrates a significant evolution of the mechanism that is not yet fully understood, but that clearly indicates that the CDM contributes to facilitating ambitious mitigation action in developing countries – even though in different ways than originally envisioned.

4.5. NAMAs with potential for inclusion in NMM

NAMAs today represent a broad variety of – mostly government led – initiatives with more or less clear mitigation benefits. Hereby the term “NAMA” does not say anything about the character of the interventions under the NAMA, which can involve a large range of different measures from awareness raising campaigns to the introduction of mandatory regulation. Thus, it appears logical that certain interventions labeled as NAMAs are activities that could potentially qualify for NMM pilots.

Tunisia seeks to develop sectoral crediting pilot activities in both the cement and the electricity sector. The feasibility and potential modalities of such a pilot in the cement sector has been framed as a NAMA and explored since 2012 in collaboration with the German Environment Ministry (BMUB) and German Gesellschaft für Technische Zusammenarbeit (GIZ), whereas UNDP has been supporting feasibility studies in the renewable energy sector. Activities established in the cement NAMA represent a mitigation potential of 8 Mt CO₂e over 2014 to 2020 while the renewable energy (RE) NAMA has a mitigation potential of 22 Mt CO₂ in 2030 (GIZ 2013). Tunisia is currently seeking support from the PMR to pilot a sectoral crediting mechanism in one of these two sectors; however, considering limited resources of the PMR, potential NMM piloting activities in the other sector may possibly seek other streams of international support. Tunisia has also demonstrated its commitment to participate in the NMM through its submission to the UNFCCC in March 2013.

Some donor activities implemented through multilateral development banks or international financial institutions tasked with the implementation of financial mechanisms of the UNFCCC such as the Global Environment Facility (GEF), the Least Developed Country Fund, or the Adaptation Fund also represent efforts to advance specific NAMAs towards later inclusion in NMMs. In most cases, the focus is however not on the crediting potential of the NAMAs. This is partly because NAMA host country governments are looking for near term financing opportunities and currently participation in a NMM pilot does not appear to be the most straightforward option to achieve this. Therefore donor activities with regard to crediting of NAMAs consist mainly of capacity building and readiness of specific countries' sectors most suited for credited NAMAs.

Among existing NAMAs one should also look for those with a highly established and reliable MRV system in order to identify potential national mitigation actions that could transition into an NMM pilot activity. The MRV system of such NAMAs should notably track in a reliable manner not only GHG emissions and be able to prove that this is done in a high quality, but also provide reliable information on the advancement of measures and policies for quantifying direct, indirect, long-term emission reductions and sustainable development co-benefits and costs (including baselines, indicators and results chains). The reporting has to include clear links to the GHG inventories and of course meet the requirements of biennial update reports. Last but not least, to meet the high standards required for a NMM pilot the information generated should systematically be verified by independent experts; meeting the standards of international consultation and analysis¹². It appears that to date hardly any MRV concepts of NAMAs can reliably prove to meet these standards. Given its state of implementation, the NAMA in the Mexican residential building sector, which provides a comprehensive national MRV framework, is providing the most interesting example. It is also rooted in a dedicated climate change law, which provides a strong (and politically durable) mandate for mitigation action and the need for MRV.

An interesting case for a sector wide activity is the NAMA on supporting implementation of 100% RE by 2020 in the Cook Islands. The Cook Islands government has set a policy goal of 100% renewable electricity by 2020, with the intermediate goal of achieving a 50% target by 2015. Under the NAMA the current electricity supply through diesel generator sets shall be replaced with renewable sources of energy, and reserving diesel generators as a back-up. The overall transition of the energy system involves numerous activities, of which RE technology trades training courses and policy assistance for new legal and regulatory frameworks shall be formulated as a NAMA. Based on the current total electricity generation per annum in the Cook Islands, the benefits of replacing diesel generation with renewable sources of electricity are estimated at 25 kt CO₂e. The overall costs to reach the 100% RE target by 2020 are expected to amount to USD 200 million, the required finance the Cook Islands are seeking under the NAMA registry for supporting the NAMA implementation accounts for USD 440.000 (UNFCCC 2014).

While this particular NAMA proposal with its capacity building and policy support measures would probably not qualify as a NMM pilot, the interesting aspect of this NAMA approach in the context of this assessment is that the island character and the relatively low complexity of sector structures would allow for a good pilot case under the NMM. The same holds true for an energy sector NAMA from Jamaica that is currently under development and will incorporate preparatory work developed under the CDM for fostering wind farms. Here the idea is to apply a "Regional NAMA" approach for utilizing synergies with similar attempts in the region.¹³

¹² See Annex IV: <http://unfccc.int/resource/docs/2011/awglca14/eng/l04.pdf>

¹³ <http://www.latincarbon.com/2014/docs/Presentations/Po5%20Gerald%20Lindo.pptx>

Table 6 Evaluation of pilot NAMA activities

Item	Evaluation
Emission reduction potential	<ul style="list-style-type: none"> Depends on NAMA, potentially very high
Environmental integrity (including net mitigation contribution)	<ul style="list-style-type: none"> Depends on NAMA MRV design The NMM could make a difference in serving as a “Gold Standard” for NAMAs
Availability of MRV structures	<ul style="list-style-type: none"> Highly dependent of sector, but potentially based on CDM methodologies
Data Availability	<ul style="list-style-type: none"> Dependent on sector
Technical feasibility	<ul style="list-style-type: none"> Good, although dependent of sector
Cost	<ul style="list-style-type: none"> As the scope of interventions under a NAMA is very broad, the costs may vary from moderate to very expensive
Quality of the financing concept	<ul style="list-style-type: none"> Depends on individual case; for the introduction of renewable energy on islands the implementation costs do not appear as major barrier Only an insignificant share of international climate finance has been channelled to NAMAs, despite the prominence of the concept to account for mitigation contributions by developing countries No direct financial value for mitigation impact (unlike carbon credits)
Level of support by host country	<ul style="list-style-type: none"> NAMAs are typically driven by governmental stakeholders and thus enjoy a high degree of governmental support Governments, however, may not have implementing capabilities and cooperation with private sector or other project participants may therefore be a challenge
Political feasibility (stakeholder interests and social dimensions)	<ul style="list-style-type: none"> Depends on interventions under the NAMA: Obtaining support through the NMM does not necessarily represent a barrier. Conditions of the NMM (such as accounting standards, net mitigation) can, however, become problematic

Summary

Lessons from the NAMA activities discussed above show that NMM pilot could potentially be developed, e.g. for the electricity sector of small island economies. At the moment, NAMAs and market-based activities are to some extent artificially separated, as crediting approaches are currently not applicable for NAMAs at least under the CDM. With more clarity on eligible approaches under new market mechanisms, as well as provision of international climate finance for NAMAs, the respective strengths and weaknesses of climate finance and carbon market approaches should be blended in order to overcome existing limitations of individual instruments.

4.6. Results based finance

Introduction

Results orientation is an increasingly important trend in international climate finance and beyond. This can be observed in the debate on performance indicators in the Green Climate Fund, REDD+ and a range of bi- and multilateral initiatives such as Energy+, EnDev and others.

Activities

KfW, in collaboration with the Development Bank of Latin America (CAF) and support from the Latin American Investment Facility (LAIF), has proposed a Performance Based Climate Finance (PBC) Facility to promote sectoral GHG mitigation schemes in Latin American countries to achieve GHG emissions reductions of 1 Mt CO₂e by 2021. It aims to pilot two activities to showcase in the international arena as well as test key elements of sectoral approaches. The PBC consists of a Technical Assistance Facility to provide initial funding of € 2 million to build capacity and overcome barriers to implementing sectoral policies with ambitious mitigation targets (e.g. building an MRV system, designing mitigation policies), as well as a Financing Facility of € 8 million to provide incentives for mitigation through dispersion of payments contingent on verified emissions reductions. While CAF and KfW intend to supply the main financing amounts for the initial pilot activities, they expect to leverage € 50-80 million for additional pilot schemes from other financing partners (private sector, banks, crediting mechanisms). Through the success of these pilots in overcoming initial barriers, the PBC aims to create suitable institutional settings for future NAMA and / or market based-approaches. It targets the renewable energy, energy efficiency, municipal solid waste management and transportation sectors. An implementation concept has been developed since August 2014 for a mitigation scheme for methane capture and avoidance in the municipal solid waste sector in Ecuador.

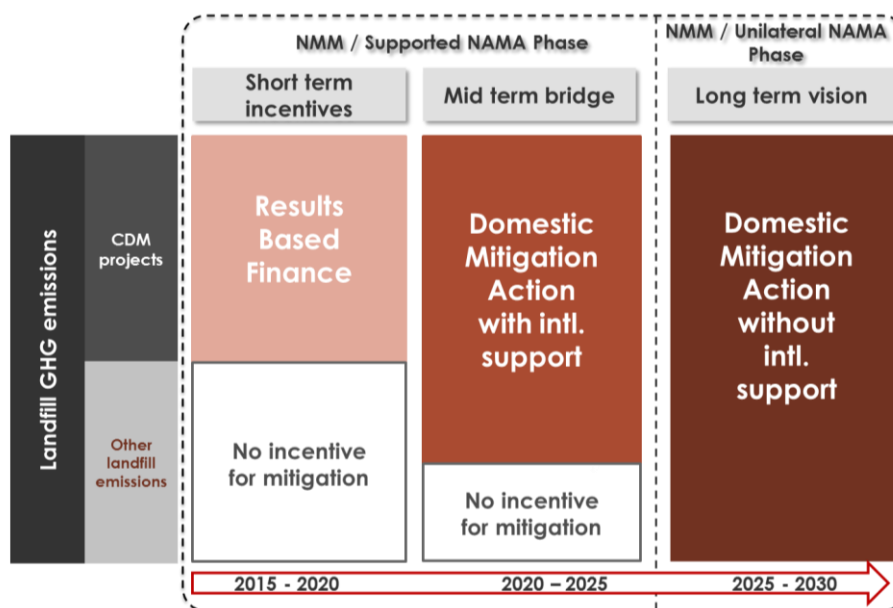
Another example for opportunities of RBF approaches is the Colombian landfill gas sector. Existing registered CDM projects in the landfill sector in Colombia currently have a mitigation potential of more than 20 million t CO₂e until 2020, and more than 45 million t CO₂e until 2030. However, existing CDM landfill projects currently do not receive enough credit revenues through CER sales to uphold the operation of CH₄ capturing equipment. It is thus a realistic scenario for project proponents to dismantle the CH₄ capture equipment and let the methane escape to the atmosphere. A short- term solution for such projects to provide incentives for continued operation would be RBF.¹⁴ So far, one Colombian CDM landfill project has been contracted by NORCAP. The question is whether this procurement has sustainable impacts on the landfill sector and incentivizes long term transformative changes.

¹⁴ This includes the Norwegian (NORCAP - http://www.nefco.org/financing/nefco_norwegian_carbon_procurement_facility) and Swedish governments (<http://www.energimyndigheten.se/en/Cooperation/For-a-better-climate/Flexible-mechanisms-for-monitoring-green-house-gas-emissions/Swedish-CDM-and-JI-climate-programmes-/Call-for-CDM-proposals-/>). The World Bank, with support by European governments, runs several procurement programmes, most recently the Pilot Auction Facility (<http://www.worldbank.org/en/topic/climatechange/brief/pilot-auction-facility-methane-climate-mitigation>), as well as the Carbon Initiative for Development.

In this regard it could make a lot of sense to directly build on the existing CDM portfolio for initiating a sectoral transformation for the landfill sector under a NMM or NAMA approach. This would in the mid-term perspective also cover non-CDM activities. One could apply a three-phase approach, as sketched below:

- **Short-term phase:** keeping CDM projects alive and operational by procurement of CERs through international donors, but also start involving Colombian government to the extent possible (e.g. through loans by FINDETER, etc.);
- **Mid-term phase** (“bridge”): Grouping of all landfills under the NMM or a NAMA; Starting a transformation, i.e. Colombian government would start formulating and step by step introducing regulation to capture methane emissions from landfills, supported through intl. support (NMM / supported NAMA phase) and decreasing role of support by international donors over time; increasing relevance of regulation through government over time;
- **Long term phase** (“ultimate objective”): A nationwide binding regulation to capture methane emissions from landfills in Colombia (NMM / unilateral NAMA phase).

Figure 3 NAMA transformation process over time



This approach would allow for a transformational process for landfill emissions, and could also incorporate non-climate aspects such as socio or economic or other environmental benefits. Attractiveness of this proposal is due to the opportunity to harness international support and over time phasing in more and more binding national regulation. This allows for a smooth transition, but would need commitment from the emitters (landfill owners such as municipalities, private sector actors), as well as from the government. International donors could identify this approach as a pilot for how the NMM (or NAMAs) can transform sector regulation, and how CDM activities can be translated into future climate policy instruments.

REDD+

REDD+, a concept that emerged in 2005 at COP 11 in Montreal, is different from afforestation and reforestation (A/R) CDM as it is based on the idea of designing MRV systems for carbon that is stored in existing natural forests. This allows reducing deforestation by providing funding for conservation and sustainable management of forests. Despite the strict opposition of many stakeholders against this concept which led to the exclusion of avoided deforestation from the CDM, the debate on how to operationalize REDD+ has evolved significantly, and has already moved towards practical implementation.¹⁵

Until COP 19, progress on REDD+ in the UNFCCC negotiations has been slow due to controversies on reference levels, safeguards, MRV, and modes of financing. In addition, there has always been an ideological undertone to this debate, largely related to the role of the possible carbon market dimension in REDD. Some parties perceive REDD+ as a cost-effective contribution to global mitigation efforts and potentially a source of offset credits. However, other countries, led by Latin American Alianza Bolivariana para los Pueblos de Nuestra América (ALBA) countries, reject the idea of using carbon markets in general, and fight the introduction of carbon market elements into REDD+ at UNFCCC level. In 2013, COP 19 managed to agree on a broad range of decisions within the Warsaw Framework on REDD+, thereby strongly increasing the certainty that the mechanism will eventually become part of the UNFCCC architecture, even though its form requires further clarifications. Importantly, these decisions establish that REDD+ will be operated as a results-based finance mechanism, with the possibility of allowing both market and non-market approaches to mobilize support.

Voluntary carbon standards have already generated methodologies, registered activities and verified emissions reductions (VER). In order to advance practical implementation, the US, UK and Norway have pledged USD 280 million to the “Initiative for Sustainable Forest Landscapes” (ISFL) to complement the decisions on the Warsaw Framework, which will be channeled through the World Bank’s BioCarbon Fund. In addition, the FCPF Carbon Fund has a volume of USD 400 million and provides a framework to finance REDD+ ex post in a results-based payment manner on national or subnational level (see 5.3.3 below for a further discussion on different REDD+ financing vehicles). Public sector initiatives such as Germany’s REDD Early Mover Programme, which has already sealed transactions with Brazil’s Acre REDD activities for up to 8 million VERs that are to be fully retired, are a clear indicator that governments are exploring different practical pilot activities with a view of formalizing REDD+ within the UNFCCC context, and involving some form of crediting. Importantly, resulting carbon credits do not necessarily need to be used as offsets, but can also be used to merely demonstrate mitigation results. Therefore, the toolbox for using REDD credits in a market approach is already relatively mature. Still, whether REDD+ will evolve to allow for market approaches depends to some extent on the interests of powerful REDD+ host countries, as well as the willingness of compliance buyer countries. Despite the mentioning of market elements, REDD+ is

¹⁵ For instance through bilateral agreements (e.g. between Norway and the Brazilian Amazon Fund), multilateral initiatives (UN-REDD programme, Forest Carbon Partnership Facility (FCPF)), as well as voluntary carbon standards.

currently not a UNFCCC offset mechanism. Although any suggestions on possible scale of REDD remain thus speculative, it is already clear that REDD+ would likely reach a scale that would strongly influence global supply and market prices. For instance, GCP et al (2014, p.13) estimate that between 3300 and 9900 million t CO₂e from all AFOLU activities are needed to achieve 50% reduction in deforestation by 2020. The study assumes a carbon price of USD 5 /t CO₂e and that 25% of these ER would be eligible for international trading. This would generate a carbon market supply between 825 and 2475 million t CO₂e until 2020. The current level of mitigation ambition in the global climate regime is of course far from being sufficient to absorb such volumes. Finally, it is also important to recognize that these developments are a response to the current low carbon price environment for carbon credits. In a high-price scenario, it would be too expensive to cancel a large number of credits. The German supported REDD Early Movers Programme has also adopted a similar approach by purchasing and retiring from REDD+ activities in Brazil's Acre state. As a result, current REDD+ developments are possibly taking the opposite direction than the CDM, i.e. retiring credits from voluntary standards through public purchasing programmes, with a possible transition of the mechanism to a more strongly market-oriented mechanism in the future (likely after 2020). Hybrid arrangements are thinkable, in which some of the credits are canceled against public non-market finance, or by introducing buyer discounting, e.g. that more than one REDD+ credit would need to be canceled in order to offset 1 t CO₂e of compliance obligation.

Table 7 Evaluation of RBF activities with NMM potential

Item	Evaluation
Emission reduction potential	<ul style="list-style-type: none"> ▪ Very high, as many sectors can be covered ▪ Forestry and land use can achieve negative emissions
Environmental integrity (including net mitigation contribution)	<ul style="list-style-type: none"> ▪ Depends on carbon standard and on use of generated credits (cancellation or offsetting)
Availability of MRV structures	<ul style="list-style-type: none"> ▪ Good, as existing carbon standards can provide operational and (partly) UNFCCC approved carbon standards
Data Availability	<ul style="list-style-type: none"> ▪ High in some sectors with good experience (e.g. electricity) generation ▪ Uncertain in other sectors (e.g. forestry)
Technical feasibility	<ul style="list-style-type: none"> ▪ Dependent on sector/activity
Cost	<ul style="list-style-type: none"> ▪ Renewable energy costs have decreased significantly in recent years, and most countries have made initial experiences with deployment ▪ Some low-hanging fruit in previously unexploited sectors (Forestry)
Quality of the financing concept	<ul style="list-style-type: none"> ▪ Dependent on the approach
Level of support by host country	<ul style="list-style-type: none"> ▪ Very high if there is direct public sector involvement ▪ Some activities are prepared through intensive readiness phases with government involvement (REDD+)
Political feasibility (stakeholder interests and social dimensions)	<ul style="list-style-type: none"> ▪ Dependent on respective activity and government involvement

Summary

The example of the Colombian landfill gas sector illustrates that a sequenced approach of classic RBF with a transformational character that increases the host country ownership and leads to a long term regulation could serve as a NMM pilot. This case also illustrates how such NMM pilots can build on existing CDM activities, and be complemented in their support through other financing instruments that balance weaknesses of a purely market-based approach. The example of REDD+ demonstrates that results-orientation is becoming increasingly firmly entrenched in UNFCCC mechanisms. Whether REDD+ will emerge as a market mechanism depends on future political decisions, but it is clear that both from a methodological as well as from a practical point of view, many important requirements are already being established, sometimes outside of the UNFCCC process, but increasingly also within. In general, results-based finance shows many similarities with market mechanisms, e.g. with regarding to the level of accuracy required to establish measurable units to demonstrate performance, and related institutional arrangements.

4.7. Other domestic climate policies with mitigation impact

Introduction

Many developing countries are engaged in numerous activities resulting in GHG mitigation, reaching from renewable energy promotion programmes to appliance standard reform or energy sector regulation initiatives. Many of these policies are successful but have not been labelled as mitigation policies or even NAMAs due to the fact that their primary objective was outside of climate policy despite their potential to mitigate GHG emissions. It is thus worthwhile identifying such efforts as potential pilots under the NMM in order to expand their scope. However one also needs to be careful not to simply replace existing financing flows by climate finance flows.

Activities

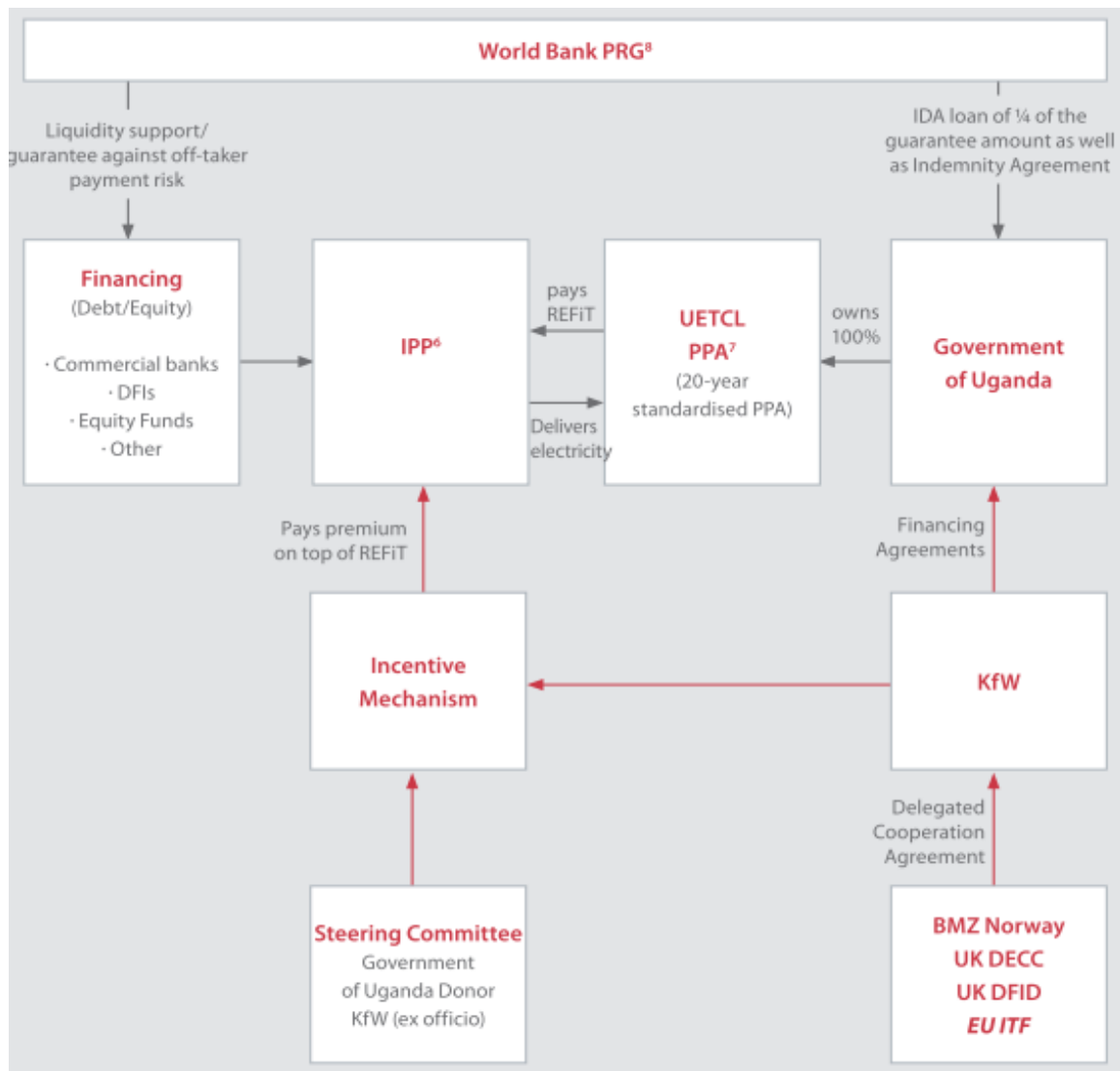
Integrated climate finance – GETFiT Uganda

The GETFiT programme has been designed to attract private sector renewable energy RE investment into the electricity sector in Uganda and potentially further East African countries in order to achieve emissions reductions and improve electricity access. The programme utilizes three instruments to create an enabling environment for RE development: after a competitive bidding process in which developers submit their price of RE electricity generation, they will receive a results-based premium payment additional to standard electricity tariffs, eligibility for a Partial Risk Guarantee provided by the World Bank, and technical assistance. Currently the programme constitutes a public-private partnership as it uses public funds and mechanisms to leverage private sector investment. However, it is expected that private sector investment will eventually occur independently of public support once a stable regulatory framework has been established and barriers to RE are removed (Kreibieh I& Miltner, 2013), and the costs of renewable energy technologies continue to decrease. The programme was rolled out in Uganda in May 2013 and aims to fast-track 15-20 small-scale RE projects totalling 170 MW capacity. It is expected that this will result in emissions reductions of 11 Mt CO₂ over 20 years (Multiconsult, Norplan 2013). Donors of the

Uganda GETFiT pilot are currently exploring options to replicate its success in other countries and sectors. All GETFiT activities are classical CDM activities and some have them have even been considered for inclusion into the CDM prior to the emergence of the GETFiT scheme.

Given the current public involvement in the programme, private developers under the GETFiT programme cannot generate and sell carbon credits on a compliance market, but can cancel or sell them to the voluntary market. In the long-term, carbon markets may become an alternative to top-up payments but, in the meantime, such premium payments through investment grants offer an effective and easier means of leveraging private capital for RE projects. Still, carbon emission reduction could be through CDM methodologies, thereby effectively using the CDM as an **MRV toolbox**. In addition, as public funding is limited, in theory, carbon credit revenue could complement international public finance, either to scale up the activities in Uganda, or to replicate them in additional countries in the region.

Figure 4 Illustration of GETFiT financing approach



Source: EU Africa Infrastructure Trust Fund (2013)

NMM activities based on national climate strategies

The government of Ethiopia has been highly ambitious in seeking to decarbonize its economy through its Climate Resilient Green Economy Strategy (CRGE) while leapfrogging from being an LDC to a middle income country by 2025. CRGE has developed sophisticated analyses of key sectors, and is currently in the process of preparing sectoral strategies, one for green growth (i.e. mitigation) and one for climate resilience (i.e. adaptation), respectively. This may also include a sectoral reduction mechanism (SRM), which has been announced but is yet to be fully defined, although there are indications that it may rely on some form of crediting. Whether this instrument is to rely primarily on the existing UNFCCC mechanisms or develop country-specific approaches is not yet decided, and may also depend on the respective sectors, which include agriculture, buildings, energy, forestry, health, industry, and transport. Still, the SRM and CRGE in a broader sense continue to mature and

are moving towards implementation, as individual activities such as National Improved Cook Stoves Programme, which intends to set up a PoA, evolve, and Ethiopia's national Climate Fund (CRGE Facility) has received first disbursements. The role of market mechanisms is not fully defined, although the government is sympathetic to their use despite the relatively weak uptake of the CDM in Ethiopia. CDM implementation has been constrained to a large extent due to Ethiopia's very low grid emission factor, which prevented the country from benefiting from the CDM to support the development of its (largely untapped) renewable energy potential. This example raises the important issue that if a reformed CDM or new market mechanisms are to adequately consider the circumstances of low-income countries, a focus away from strictly the mitigation of historical emissions is necessary. The transition from pure offsetting to other approaches to incentivize and account for mitigation impacts may present an opportunity in this regard. Still, Ethiopia continues to attempt to access all available sources of climate finance, including from the CDM, JCM, NAMAs, Green Climate Fund, REDD+, and bilateral sources and may be open to explore NMM opportunities as part of the sectoral strategies developed in CRGE.

Sector-specific (market) mechanisms based on CDM activities

The CDM has been criticized for an incentive structure focused on generating large volumes of CERs at low costs without regards to environmental integrity and co-benefits. This has led to the exclusion certain project types in the EU ETS, including industrial gas destruction. However, some of these activities are currently under threat to stop the destruction facility as CER revenues evaporate. Entire industries or sectors could be isolated out of the CDM for incorporation under a NMM. Under a NMM, existing CDM methodologies would provide a methodological framework for generating high integrity emissions credits which could then be utilized under a broader instrument such as a carbon tax or ETS. Net mitigation could be achieved through measures such as ambitious baselines, shortened crediting periods or discounting.

Given the pressure to exclude such project types from a reformed CDM, this NMM activity could be complementary to the CDM without the risk of double-counting, while allowing reaping these cheap, yet large volumes of emissions reductions, which remain otherwise unaddressed. Two approaches could be taken depending on the previous existence of CDM projects: on the one hand projects could be deregistered from the CDM, while continuing the activities and maintaining the monitoring practices for inclusion in an alternative project format, benefiting from adequately priced sale of emissions reductions credits. In case no previous CDM projects exist, new projects could be set up with similar rigour and procedures as under the CDM but with the objective of inclusion in a separate element for crediting under a NMM. Another option may be an inclusion into the institutions of the Montreal Protocol, including its multilateral fund (Cames and Schneider 2014). This would represent a complete deviating from the offsetting approach, and may be feasible due to the low mitigation costs per ton of CO₂e.

Table 8 Evaluation of climate finance and mitigation policies with NMM potential

Item	Evaluation
Emission reduction potential	<ul style="list-style-type: none"> Very high in some sectors (e.g. industrial gas)
Environmental integrity (including net mitigation contribution)	<ul style="list-style-type: none"> Large variability, depending on stringency of approach taken
Availability of MRV structures	<ul style="list-style-type: none"> Good in case of the Ugandan GETFiT model or in case of existing CDM methodologies of project types such as industrial gas production. The latter, however, needs to be complemented by an approach to reach net mitigation.
Data Availability	<ul style="list-style-type: none"> Good
Technical feasibility	<ul style="list-style-type: none"> Good for individual projects, but more difficult in the context of national strategies, or institutional linkage between the UNFCCC and other multilateral agreements
Cost	<ul style="list-style-type: none"> Low in case of excluded CDM activities Higher for GETFiT model
Quality of the financing concept	<ul style="list-style-type: none"> Depending on the technology, a range of tested instruments is available (REFITS, Fund)
Level of support by host country	<ul style="list-style-type: none"> High in case of GetFit Uganda, more challenging in the transition of industrial gas away from the CDM due to previous high windfall profits

Summary

The examples illustrated above demonstrate again that there are very ambitious domestic mitigation policies exist even in low-income countries, for which CDM methodologies already exist. That they currently do not have a market component is sometimes due to political decisions (GETFiT) or uncertainty over the future relevance of market mechanisms (CRGE). However, the sectoral orientation and strong regulatory framework that is developed for these activities would allow it to add a market component relatively easily as MRV structures are already being developed.

5. Evaluation of possible NMM pilot activities

This chapter summarizes the key results of the multi-criteria analysis and presents an evaluation of the pilot activities. Table 5 presents the overview and assessment of the selected initiatives along with a brief recommendation.

Table 9 Summary evaluation of existing activities with NMM potential

Criteria	JCM pilot activities	PoAs with potential for NMM	Climate Investment Funds	Carbon Taxation	NAMAs with potential for inclusion in NMM	Results based finance	Climate finance and mitigation policy
Emission reduction potential	Initially below CDM micro-scale, but with plans to widen scope to industrial applications	High due to possibility of scaling up through inclusion of unlimited additional activities in multiple countries	Focus on energy sector allows for potentially very high emission reductions	High, as some developing countries have begun to tax the most emissions-intensive sectors	Depends on NAMA, varying from low to high	Very high, depending on sector	Very high due to sectoral orientation
Environmental integrity (including net mitigation contribution)	JCM methodologies claim to lead to net mitigation. Methodologies and positive lists for additionality need to be assessed in detail (possibly against CDM benchmark) to understand environmental integrity.	Highest, for the case of cancellation of CERs; medium through conservative default values or discounting; avoiding double counting by attributing emissions reductions to buyers or host countries;	Currently 100% net mitigation, as no emission reductions are certified	High, as mitigation does not lead to tradable credits, and offsetting remains supplementary, i.e. additional net mitigation effects are achieved	Depends on NAMA design; here the NMM could make a difference in serving as a “Gold Standard” for NAMAs.	Very high if no offset component (or credit cancellation), otherwise dependent on integrity of carbon standard, in particular baseline and additionality	High if no offset certificates are generated, otherwise dependent on methodologies
Availability of MRV structures	MRV regime is based on methodologies and includes third party auditing. Yet, there is no system of independent checks and balance without an incentive to benefit from higher credit yields	Good, as MRV systems can build on existing (or new) CDM methodologies	CIF relies on M&E frameworks that resemble MDB funded activities, but do not consistently measure and report GHG ER.	Good, as there is a clear incentive to accurately measure emissions to gain tax revenue, as well as to regulate offset use	Highly dependent of sector, can build on CDM methodologies and increasing experiences	Good due to results orientation	Good for many sectors, but those not taken up strongly under CDM still lack standards (e.g. transport, agriculture...)

Criteria	JCM pilot activities	PoAs with potential for NMM	Climate Investment Funds	Carbon Taxation	NAMAs with potential for inclusion in NMM	Results based finance	Climate finance and mitigation policy
Data Availability	Initial reliance on few technologies with good data availability	High, as PoAs require detailed monitoring plans	Very good regarding technical projects of individual activities. Poor regarding mitigation impact, as there are not dedicated methodologies made available	Good, as there is a clear incentive to accurately measure emissions to gain tax revenue, as well as to regulate offset use	Highly dependent of sector	Good due to results orientation)	Good for many sectors, but some, in particular those not taken up strongly under CDM still lack comprehensive standards (e.g. transport, agriculture, buildings...)
Technical feasibility	JCM relies on tested technologies and is restricted to Japanese technology providers	High, concept would build on existing infrastructures or already operational projects; cancellation is already being applied	Very good, due to comprehensive and detailed analysis accompanied by readiness activities	Good, as there is experience in an increasing number of countries	Good, although dependent of sector	Dependent on sector	Dependent on sector, but increasing experience with climate finance, in particular in anticipation of GCF
Cost	High transaction costs in setting rules, institutions and procedures, so far borne by the Japanese Government. Lack of international competition among project developers and technology providers may raise cost.	PoA development costs and transaction costs associated with measures to avoid double-counting	Appraisal according to MSB best practices	Planning and Implementation generate initial transaction costs, but raise substantial revenues. Developing countries tend to rely on use of CDM, which prevents additional costs to develop domestic schemes. Narrow eligibility criteria may raise prices	As the scope of interventions under a NAMA is very broad, the costs may vary from moderate to very expensive	Depending on sector and activity	High, as national planning and strategy development is very resource-intensive

Criteria	JCM pilot activities	PoAs with potential for NMM	Climate Investment Funds	Carbon Taxation	NAMAs with potential for inclusion in NMM	Results based finance	Climate finance and mitigation policy
Quality of the financing concept	Project finance with support from the Japanese government. Credit prices negotiated bilaterally, but not disclosed.	Private sector investment; CER value dependent on volatile market prices or public procurement in case of attractive co-benefits	Reliant on project finance according to MDB practices, high leveraging factor from additional MDB cooperation. Limited to project portfolio, no clear trajectory on how further activities be financed. Potential role of carbon market revenues ignored	Similar to CDM	Depends on individual case; for the introduction of renewable energy on islands the implementation costs do not appear as major barrier.	Some results-based finance mechanisms have elaborate readiness and appraisal phases	Dependent on country and sector Climate finance is sometimes competitive (e.g. NAMA Facility), which may incentivize a “race to the top” in terms of quality of the financing concept
Level of support by host country	Host countries are required to participate in Joint Committees, and project participants need to be engaged.	High, in particular if public project participant / CME, or if SD co-benefits are substantial	Strong involvement of host country from planning to implementation phase, but no permanent institutions or specific regulatory roles	Introducing a carbon tax requires very strong government commitment	NAMAs usually will involve governmental stakeholders and thus most certainly have governmental support	Very high for approaches with mandatory government involvement such as REDD+	
Political feasibility	Activities enjoy high political support due to endorsement by bilateral committees. Yet, general legitimacy of JCM in a multilateral setting is questionable.	High in case of direct public sector involvement; High degree of uncertainty among policy makers due to low CER market value and political uncertainty	High, due to strong involvement of host country and sometimes large mobilization of investment	Planning a transition to an ETS or STM may increase attractiveness as it potentially reduces costs for affected companies	NAMAs depend on strong government involvement.	High for some mechanisms (REDD+), although there is a proliferation of results-based finance approaches which may lead to scepticism	Very high, as only governments can prepare national or sectoral strategies

Criteria	JCM pilot activities	PoAs with potential for NMM	Climate Investment Funds	Carbon Taxation	NAMAs with potential for inclusion in NMM	Results based finance	Climate finance and mitigation policy
		on relevance of CDM (+) in the new climate regime				among host country governments, in particular those with weak capacities	
Recommendation	<p>Japan envisages the JCM to be eventually integrated into a multilateral framework. However, as Japan is not interested in adopting centralized accounting standards and institutional arrangements, the JCM is oriented towards the FVA. While the JCM addresses some NMM Priorities (net mitigation, involvement of host country as precondition for reaching broad segments of the economy), the governance and incentive structure may not comply with the NMM as it is envisaged today. Thus, the JCM is not recommended to be a feasible NMM pilot.</p>	<p>PoAs, in particular with public sector involvement, represent ideal pilot activities, as there are already UNFCCC-approved methodologies and often practical experiences. A range of options exist to meet NMM requirements such as enhance mitigation contribution.</p>	<p>CIF focuses on key sectors in which there is ample CDM experience. In particular as funding is limited to one or two pilot activities per sector and country, carbon market approaches based on adjusted CDM methodologies may strengthen accuracy of MRV and allow to mobilize further resources</p>	<p>The combination of carbon taxes and offsetting seems to emerge as a highly attractive mitigation option, at least for more advanced developing countries with sufficient technical capabilities and political will. Possible transitions to an ETS or STM have not yet been thoroughly assessed and should be explored in more detail, as such plans exist in Annex I countries (e.g. British Columbia in Canada, previously Australia)</p>	<p>Governments which are open to market-based approaches may be willing to pioneer NAMAs with crediting elements. Drawing on PoA elements is highly recommended, e.g. by adopting lessons from CME requirements for the host country</p>	<p>RBF holds the potential to meet most NMM requirements, and at the same time adopt market based activities on the domestic level.</p>	<p>An increasing number of developing countries, including LDCs but also more advanced economies are preparing detailed national and sectoral strategies. The respective potential of the increasingly diverse landscape of carbon market and climate finance instruments is not always well understood, but may open very strong foundation for the NMM</p>

6. Conclusions

As outlined in the introduction, the role of market mechanisms in the architecture of the new global climate agreement remains uncertain. The preceding chapters have demonstrated that there are a large number of ongoing activities that could evolve further into pilots for the NMM, which can inform its ongoing elaboration in a learning-by-doing approach. Some of these activities are based strongly on existing market mechanisms (e.g. public sector-driven PoAs, see 4.2), others explicitly aim at developing new market approaches (JCM, 4.1), while still others integrate market and non-market elements into hybrid approaches (carbon taxes with offsets 4.4, potentially NAMAs (4.5) and REDD+ (4.6)), or rely exclusively on non-market finance. Even for this last category, existing market mechanisms offer an MRV toolkit on which additional measures can be build that would theoretically allow such activities to be transitioned to a market-based approach. This is particularly relevant for those activities that are designed with a strong results orientation that already establishes methodologies that result in quantifying measurable units and related MRV procedures.

It is worth noting that many of these activities are taking place in low-income countries, which are currently not considered in the PMR. The information on possible NMM pilot activities compiled above thus offers a solid basis for further conceptual evolution of the NMM, and indicates that there are a number of previously unrecognized activities beyond the PMR that could be further developed to include market elements.

Yet, a strong drive towards new market mechanisms based on these activities can only be expected when political certainty both on the relevance of market mechanisms in the new global climate agreement will be secured, and if a sufficient level of long-term certainty on the value of ER certificates can be ensured. This likely not only requires a much stronger level of mitigation ambition in the global climate change regime, but also a stronger linkage with climate finance instruments. Such linkages may also offer some short-term relief for high-quality CDM activities. Through systematic cancellation of CERs, and a stronger involvement of the host country with a view to anchor market mechanisms in national strategies to achieve transformative effects, some of the NMM design principles can already be brought into the existing regulatory frameworks (strengthening mitigation impact, covering broad segments of the economy, further design principles that overlap with CDM e.g. achieving additional, measureable ER and preventing double-counting). On the other hand, one needs to assess on a case-by-case basis whether the existing CDM may be sufficiently mature, in particular if used in innovative ways and in combination with international climate finance.

These conclusions also offer suggestions which role these pilot activities may be able to take in shaping UNFCCC negotiations on the 2015 climate agreement, as well as its interpretation and implementation of new approaches. From the above activities, we recommend to more closely analyse the following activity types which seem to have the strongest potential for a NMM:

- Selected Public PoAs in low income countries / LDCs (4.2)
- NAMAs / domestic policies with robust MRV approach (4.5)
- RBF approaches with sequential and transformative character (4.6)
- Other domestic climate policies and strategies (4.7), in particular in countries which are traditionally open to using market-based approaches

Some of these activities already resemble NMM elements very closely, and may not be framed as being part of the NMM for strictly political reasons, as the NMM concepts is still controversially discussed not only in potential host countries, but also among Annex I countries.

Another emerging pilot activity with a strong market orientation is the JCM, which seems to be the first candidate for the FVA, primarily due to the governance arrangements that do not seem to allow for a strong role for multilateral institutions. The cursory analysis of the first JCM methodology indicates that there needs to be a high level of scrutiny for certificates that are generated outside of the UNFCCC architecture, in order to ensure environmental integrity. Common accounting frameworks and possibly approaches to baseline establishment will have a central role to play here, although whether parties can find agreement on robust approaches with a high level of environmental integrity cannot be credibly analysed at this stage, as the issue has not matured sufficiently on the UNFCCC level.

Finally, a more immediate question is which role market mechanisms will play in INDCs. As all countries are expected to contribute more strongly to global climate change mitigation, the question of transparent avoiding of double-counting of ER is becoming more important in the development of new market mechanisms, and political decisions need to be made on who can legitimately claim the mitigation impact of activities supported by market mechanisms. There is neither political guidance nor even conceptual research on whether the host country can claim the mitigation contribution or the buyer country. Which party can claim which contribution if the mitigation impact is only partly credited? If new market mechanisms, and possibly even a reformed CDM, should deliver stronger net mitigation impacts, it needs to be decided which emission reductions are allowed to be credited and potentially traded and which ones are not. Thus, the conceptual discussion above carries relevance beyond facilitating implementation, but can also offer insights that may inform the ongoing political discussions. In addition, a thorough analysis of the submitted INDCs with regard to the role of mitigation activities that rely on market-based approaches crediting could be very useful to understand the open challenges defined above, and thus help to further define political guidance, and, as a next step, regulatory procedures.

In conclusion, from a technical perspective, there are several options to pilot NMM activities based on ongoing initiatives that already display some of the required elements. Open questions thus are primarily related to political decisions on the relevance of both existing and new market mechanisms. The ongoing ADP negotiations indicate that both a reformed CDM as well as new mechanisms will be

assigned the role to allow parties to achieve their commitments and contributions with some degree of flexibility. Independently of progress on the political level, it seems timely to also focus more strongly on developing practical experience that can then help to drive the debate on a conceptual level, much like in the early days of the CDM. This could be achieved by focusing on a relatively small number of individual case studies of the possible NMM pilot activities described above (or similar activities, as the list may not be exhaustive, and new initiatives may emerge), which should be explored in more detail, with detailed conceptual preparations, ideally in cooperation with the respective host country government and other stakeholders.

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